

AMENDMENTS TO THE CLAIMS

1. (Previously presented) A magnetron sputtering apparatus comprising:

 a vacuum chamber;

 a target;

 a cathode holding the target in the vacuum chamber;

 a substrate;

 an anode holding the substrate and being located above the cathode so as to face the substrate toward the target on the cathode;

 a permanent magnet assembly generating a magnetic field and being located under the cathode; and

 a rotation controller rotating the permanent magnet assembly around an axis with rotation occurring on a center of the target as the axis,

 the permanent magnet assembly further comprising:

 a base;

 a first permanent magnet being fixed on the base in the middle; and

 a second permanent magnet in a ring shape being fixed in a peripheral area of the base so as to surround the first permanent magnet,

 wherein a magnetic polarity of the second permanent magnet is inverse with respect to a magnetic polarity of the first permanent magnet, and

 wherein magnetic field strength of the second permanent magnet is weaker than magnetic field strength of the first permanent magnet, and

 wherein the permanent magnet assembly is formed such that a plane constituted by a top surface of the first permanent magnet and another top surface of the second permanent magnet is slanted with respect to a surface of the target.

2. (Previously presented) The magnetron sputtering apparatus in accordance with claim 1, wherein the first permanent magnet is fixed on a middle of the base wherein a center axis of the first permanent magnet is shifted eccentrically with respect to the center of rotation of the permanent magnet assembly.

3. (Previously presented) A magnetron sputtering apparatus comprising:

- a vacuum chamber;

- a target;

- a cathode holding the target in the vacuum chamber;

- a substrate;

- an anode holding the substrate and being located above the cathode so as to face the substrate toward the target on the cathode;

- a permanent magnet assembly generating magnetic field and being located under the cathode; and

- a rotation controller rotating the permanent magnet assembly around an axis with rotation occurring on a center of the target as the axis,

- the permanent magnet assembly further comprising:

- a base;

- a first permanent magnet being fixed on a middle of the base wherein a center axis of the first permanent magnet is shifted eccentrically with respect to the center of rotation of the permanent magnet assembly; and

- a second permanent magnet in a ring shape being fixed in a peripheral area of the base so as to surround the first permanent magnet;

- wherein a magnetic polarity of the second permanent magnet is inverse with respect to a magnetic polarity of the first permanent magnet; and

- wherein magnetic field strength of the second permanent magnet is weaker than magnetic field strength of the first permanent magnet.

4. (Previously presented) The magnetron sputtering apparatus in accordance with claim 1, further comprising:

a wedge shaped member having a predetermined slant angle being located between the rotation controller and the permanent magnet assembly; and

wherein a top surface of the member contacting a bottom surface of the base is slanted with respect to the target.

5. (Previously presented) The magnetron sputtering apparatus in accordance with claim 2, further comprising:

a wedge shaped member having a predetermined slant angle being located between the rotation controller and the permanent magnet assembly; and

wherein a top surface of the member contacting a bottom surface of the base is slanted with respect to the target.

6. (Canceled)